



PV SPREAD: An Ecosystem for Disseminating Photovoltaic Plants under Prosumer Paradigms



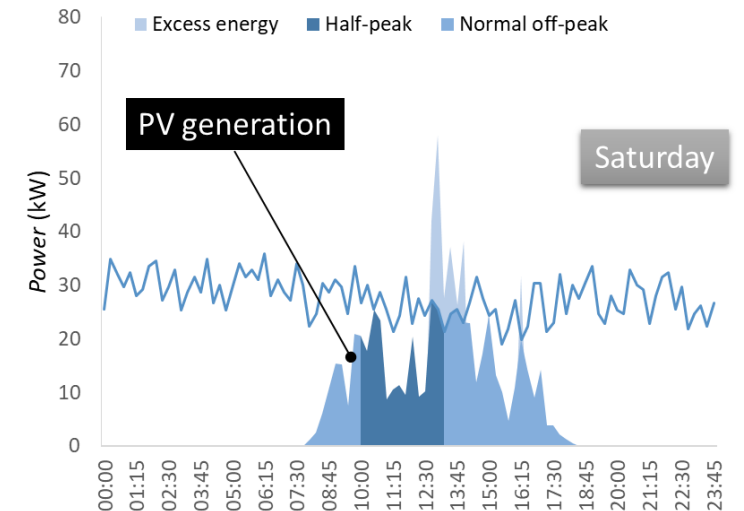
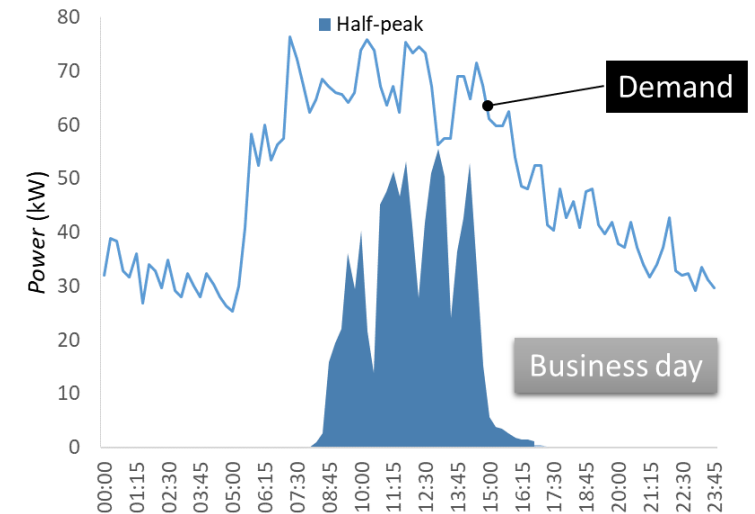
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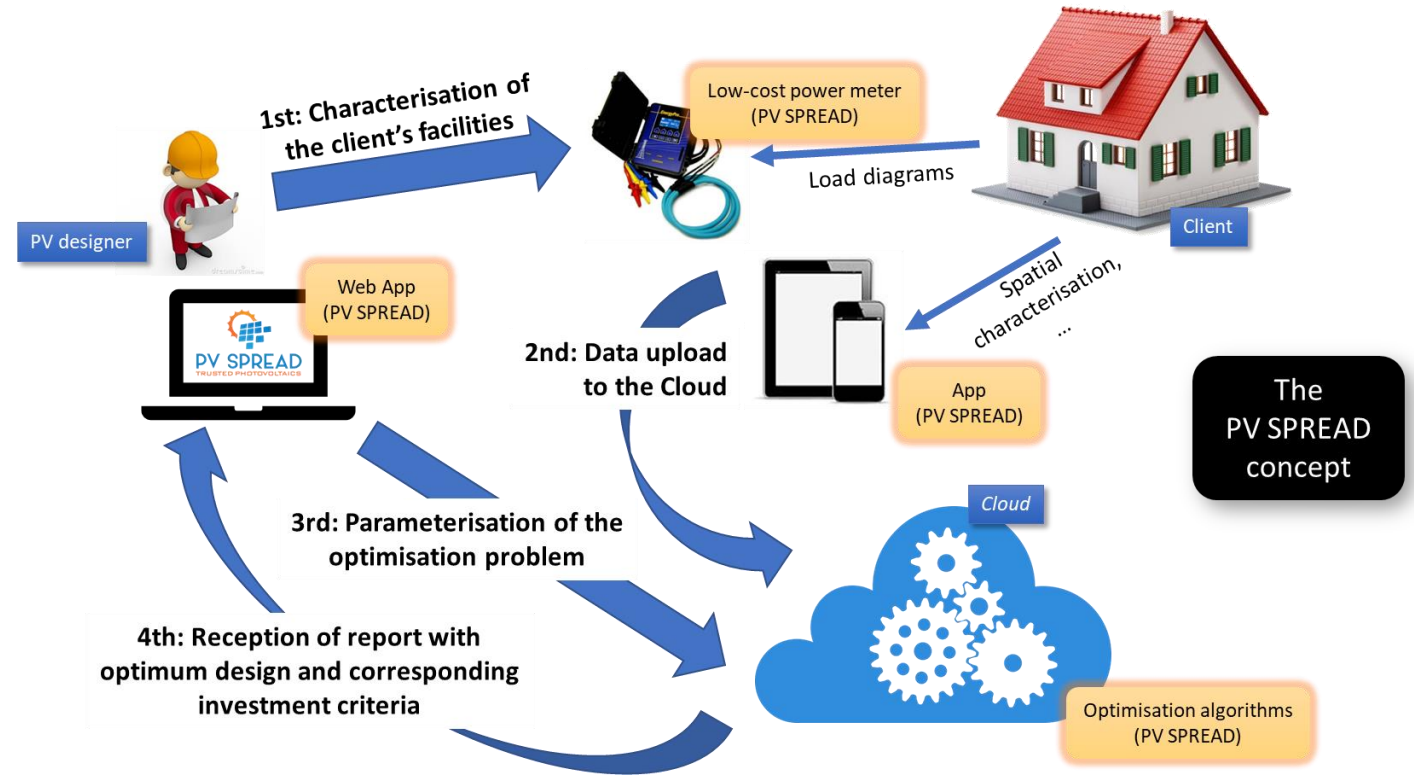
- Work funded by Fundação para a Ciência e a Tecnologia, under the frame of the research unit CTS (Centre of Technology and Systems, ref. UIDB/00066/2020), and by the P2020 project PV SPREAD (Stimulating PV RELiance, Advance and Dissemination, ref. AAC n. 31/SI/2017).
- **PV SPREAD Vision:**
 - Democratising photovoltaics (PV), through an ecosystem that supports the designer/supplier of PV plants in all stages of the project, allowing:
 - Straightforward automation and optimisation of designs.
 - Assuring clients that proposals are accurate.
 - PV SPREAD foresees a climate of trust and rigour that accelerates the dissemination of PV.
- **How to implement PV SPREAD Vision:**
 - By developing an innovative set of hardware and software tools that support designers unprecedentedly in all the stages of the PV project, reducing uncertainty, guaranteeing accuracy, and providing a reliability label.



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• PV SPREAD Goals:

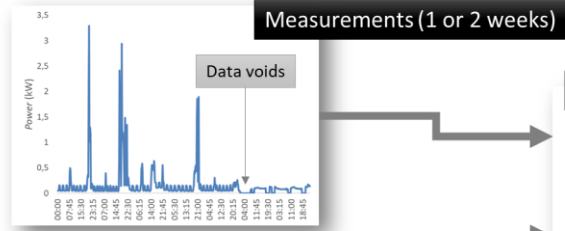
- To develop an innovative ecosystem to support all the stages of the development of PV projects, delivering automated, optimised, accurate and reliable **commercial proposals**.
- To develop intelligent algorithms and hardware/software tools that, in an integrated, holistic approach, allow supporting designers by:
 - i. Guiding them in tasks related to contact with clients.
 - ii. Automating most of the design tasks.
 - iii. Optimising multiple rentability and/or sustainability criteria of the project.



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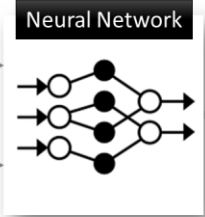
Low-cost, portable power meter



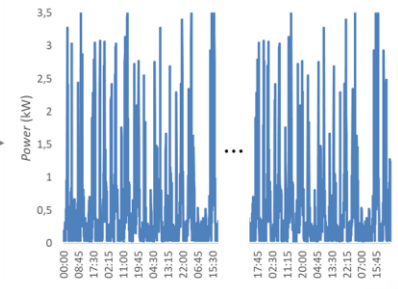
Measurements (1 or 2 weeks)



Energy bills (1 year)

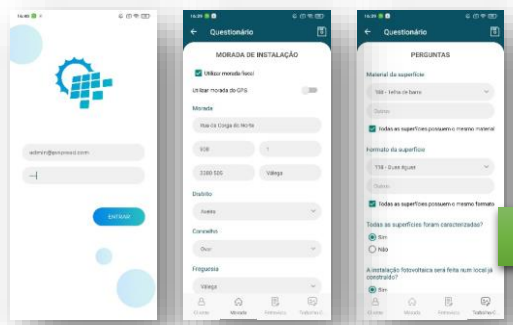
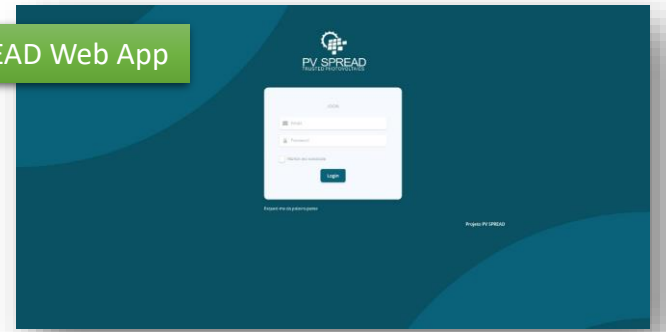


Neural Network

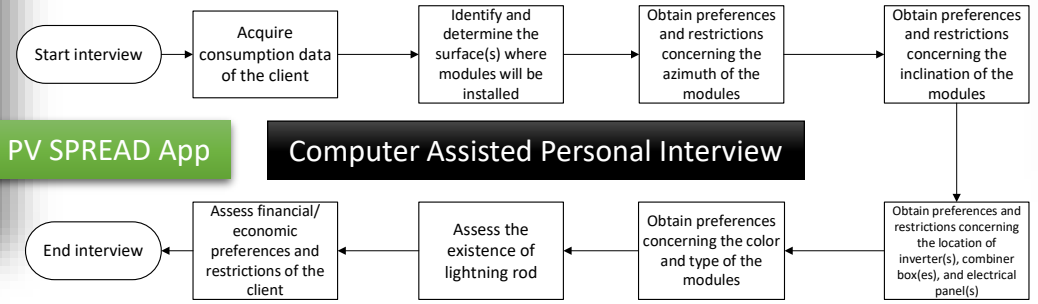


1-year tipified load diagram

PV SPREAD Web App



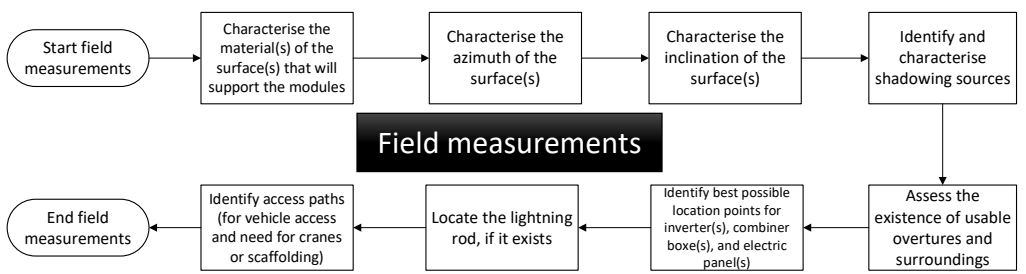
PV SPREAD App



Computer Assisted Personal Interview

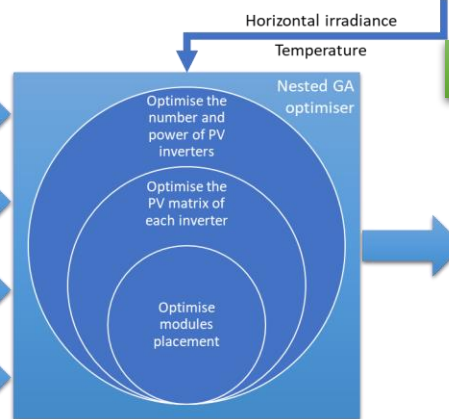


PVGIS



Field measurements

- Optimisation goals** (IRR, payback period, ...)
- Optimisation restrictions** (slope, azimuth, ...)
- Geographic and environmental characteristics** (coordinates, shadowing, ...)
- Economic/financial characteristics** (costs, need for credit, O&M, ...)



Optimisation algorithms

- Optimisation outputs (range):**
- Economic criteria:**
 - IRR, payback period, NPV, cash-flows, ...
 - Energy criteria:**
 - PR, SSR, SCR, ...
 - Electrical installation and list of materials:**
 - Inverters, modules

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- An ecosystem for supporting PV suppliers in all stages of the project was presented.
- Hardware (energy meter) and software (artificial intelligence, image processing, ...) tools developed in the context of the PV SPREAD project.
- Group of stakeholders engaged from the very beginning, they will “compete” with the system, to validate its benefits.
- More stakeholders already stated their interest in the project results.



THANK YOU!